INDIANA STATE TEACHERS' RETIREMENT FUND

Experience Study
July 1, 1997 through June 30, 2002

Gabriel, Roeder, Smith & Company

August 14, 2003

The Board of Trustees
Indiana State Teachers' Retirement Fund
Indianapolis, Indiana

Dear Board Members:

Presented in this report are the results of an ***actuarial investigation of decrement experience*** of the Indiana State Teachers' Retirement Fund. The investigation was conducted for the purpose of updating the actuarial assumptions used in valuing Indiana State Teachers' Retirement Fund actuarial liabilities and establishing employer contribution rates.

The investigation was based upon the member census data and the asset allocation information furnished by your Executive Director and his Staff annually to enable us to prepare the regular annual actuarial valuations. From these annual data submissions we were able to extract information concerning members who died, withdrew, became disabled or retired during the period ***July 1, 1997 to June 30, 2002***.

The investigation was carried out using generally accepted actuarial principles and techniques in accordance with standards of practice prescribed by the Actuarial Standards Board. We believe that the recommended actuarial assumptions that are the result of this investigation form a reasonable basis for computing future contributions and measuring funding progress for the Indiana State Teachers' Retirement Fund.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

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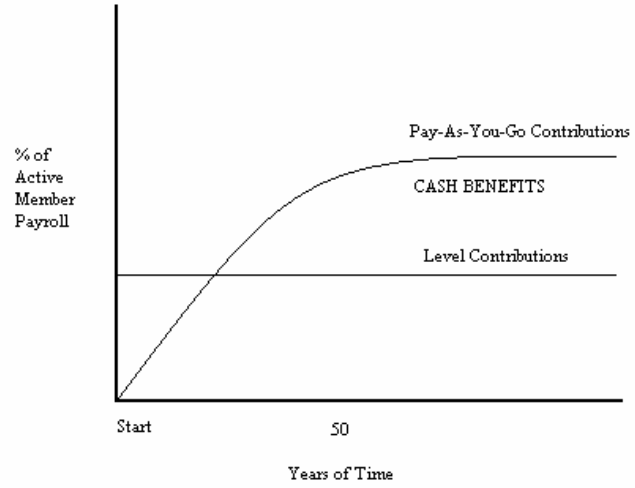
JAK:clb:lr

Overview

The Actuarial Valuation Model and the Need for Actuarial Assumptions



When a pension plan is first implemented, the cash demands are small because there are no retired members. As the plan ages, the cash demands begin to grow as more members retire. If a plan follows the **pay-as-you-go principle**, the following will happen (see illustration above):

- Cash contributions will slightly exceed the cash benefits (because of administrative expenses).
- Contributions will start very low and continue to escalate as a percent of active member payroll until the plan matures, generally over a period of 50 or more years.
- Benefits accruing now will become a financial obligation for future generations.
- The *entire* cost of the benefits currently accruing will be paid in the future.

This is the arrangement used to finance liabilities in the ISTRF closed plan.

Many plans finance their obligations in a different manner: **pre-funding with level percent of payroll contributions** (illustrated by the level line in the graph above). Under this arrangement the following are expected to occur:

- Cash contributions exceed cash demands in the early years of a plan, thereby building a pool of assets.
- The pool of assets generates investment income which will ultimately pay for a significant portion of the benefit obligation.
- Contributions are able to remain approximately level (as a percent of payroll) creating intergenerational equity.
- Cash demand (for benefit payments) will ultimately exceed the employer and employee contributions (the difference is paid for by investment income on the pool of assets).

The key to this second financing arrangement is the level percent of payroll contribution. ***This is the arrangement used to finance liabilities in the ISTRF new plan.*** This contribution is computed by means of an actuarial valuation which is essentially a mathematical model. The mathematical model is necessary in a defined benefit plan because there are "knowns" and "unknowns" which must be evaluated before the level contribution rate can be determined. The knowns are:

- Who participates in the plan.
- The demographic characteristics of each active and inactive member (i.e., age, sex, current salary, service, etc.).
- The demographic characteristics of each retired member and beneficiary (i.e., age, sex, benefit, form of payment, etc.).
- The conditions and characteristics of the plan (i.e., type and amount of benefits payable, eligibility for benefits, length of time benefit is payable, etc.).
- The current purchasing power of a dollar.
- The value of the pool of assets.
- How the pool of assets is invested.

The unknowns are:

- Who will retire and at what age, service and average annual compensation.
- Who will quit before becoming vested.
- Who will quit and be entitled to a future vested benefit.
- Who will become disabled.
- How long members and their beneficiaries will live (before and after retirement).
- What is the future purchasing power of a dollar (future inflation).
- How much income the pool of assets will generate.

The valuation model takes the "knowns," incorporates assumptions about the "unknowns" and develops the estimated cost of the plan for the current members. This cost is then financed using an actuarial cost method to determine the level contribution requirement.

Because future experience cannot be predicted with certainty, the costs can only be estimated. The model is revisited annually to re-determine the cost estimates based upon experience which has already occurred and assumptions about future experience.

A Sensitive Model – Why Assumptions Need to be Reviewed

When Fund experience deviates from expected experience, a gain or loss is generated. This gain or loss is then amortized over a period of future years and applied as an offset or addition to the normal cost contribution. Over time it is expected that the gains and losses will offset each other. If they do not, then one or more of the actuarial assumptions should be modified to reflect actual emerging experience.

If the assumptions are too conservative (the estimated cost of the plan is too high), then the computed contribution rate will decrease over time. If the assumptions are too liberal (the estimated cost of the plan is too low), then the computed contribution rate will increase over time. Either alternative is not consistent with the level percent of payroll principle to establish contributions that will, over time, remain approximately level as a percent of payroll.

In addition, *each* assumption should represent a reasonable estimate of future experience. Even though a package of assumptions may produce results which are reasonable, it is important that each component of the package reflect actual experience. Estimated costs of benefit changes, for example, are highly dependent upon specific assumptions.

The actuarial assumptions are intended to be the best estimate of future experience of the Fund when they are adopted, but conditions change over time. In addition, our understanding of the conditions affecting plan activity change (even if the conditions themselves are not changing). It is for these reasons, and the desire to keep the computed contribution rate as level as possible, that the actuarial assumptions should be reviewed periodically and adjusted to reflect basic experience trends – but not random year-to-year fluctuations.

1997-2002 EXPERIENCE STUDY
SUMMARY OF DECREMENT EXPERIENCE

Decrement Risk Area	Actual	Expected		
		Current	Proposed	Change
Withdrawal - Total	34,383	19,988	29,193	9,205
Disability	9	234	45	(189)
Regular Retirement	3,175	4,165	3,861	(304)
Rule of 85 Retirement	2,810	2,882	2,882	0
Early Retirement	1,383	978	1,282	304
(Non-Disabled) Mortality - Retired Members and Beneficiaries				
Male	2,163	2,622	2,190	(432)
Female	3,966	3,574	3,574	0

Actual Withdrawals from service were generally higher than expected. Significant increases versus expected numbers occurred mainly with individuals having less than 10 years of service. However, we believe that withdrawal rates for individuals with low service may have been somewhat distorted by the presence of substitute teachers in the data as well as disabilities and early retirements miscoded as withdrawals. We believe this primarily because the data indicated a large number of withdrawals for individuals above age 50. The recommended withdrawal assumptions recognize the 1997-2002 observed patterns of withdrawal, with less weight given to the previously mentioned groups.

In addition, the maximum length of the period of service for consideration of service-based withdrawals was changed from 5 years to 10 years to be consistent with the current vesting requirement.

Retirement Experience was studied separately for age and service, Rule of 85, and early retirements. Retirement experience indicated fewer retirements than assumed at most ages for normal retirement experience and retirements based on the Rule of 85 condition. The number of reduced retirements was more than expected. The proposed rates bring expected future retirements closer to recent experience.

Post-retirement Mortality Rates observed in the study were close to the present assumed rates. However, it is recommended that mortality rates be revised to include some margin for future improvements in mortality. Recommended mortality rates continue to reflect expected impaired longevity for disability retirees.

Pre-retirement Mortality experience was inconclusive. Revised rates are being recommended to be consistent with post-retirement mortality rates.

Actual Disability rates were found to be significantly lower than expected. However, as mentioned in the first paragraph (Rates of Withdrawal), it is possible that some individuals who were coded as withdrawals were actually disability retirements. Recommended rates partially reflect the observed patterns of disability over the experience period. This assumption does not have a large impact on retirement plan costs, but should continue to be monitored.

Pay increase rates (merit and seniority portion) were found to be mostly consistent with current rates, but somewhat higher than assumed at very early service ranges and somewhat lower than assumed at later service ranges. Recommended rates generally reflect plan experience in this area.

The combined effect of the decrement assumption changes on the contribution rate is shown on page 10.

SELECTION OF ASSUMPTIONS

The actuary should have the primary responsibility for choosing the ***demographic*** assumptions used in the actuarial valuation, making use of specialized training and experience.

The actuary and other professionals can provide guidance concerning the choice of suitable ***economic*** assumptions, but the basis of the economic assumptions is the assumed rate of ***inflation***, a quantity which defies accurate prediction by anyone. Given an assumed rate of future inflation, however, it is very important that this rate be applied in a consistent manner in deriving the assumed rate of investment return, the economic portion of the assumption of pay increases to individual employees, and the assumed rate of growth of active member payroll. Consistent application of assumptions is an area in which the actuary has specialized training.

A sound procedure is that the actuary suggests reasonable alternatives for economic assumptions, followed by discussion involving the actuary, the Plan Governing Body, and other professionals, and the Plan Governing Body then makes a final choice from the various alternatives.

Economic Assumptions

ECONOMIC ASSUMPTIONS

Economic assumptions include **long-term rates of investment return** (net after administrative and investment expenses) and **wage inflation** (the across-the-board portion of salary increases). Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are more affected by external forces; namely inflation, general productivity changes and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both are increased by some provision for long-term inflation.

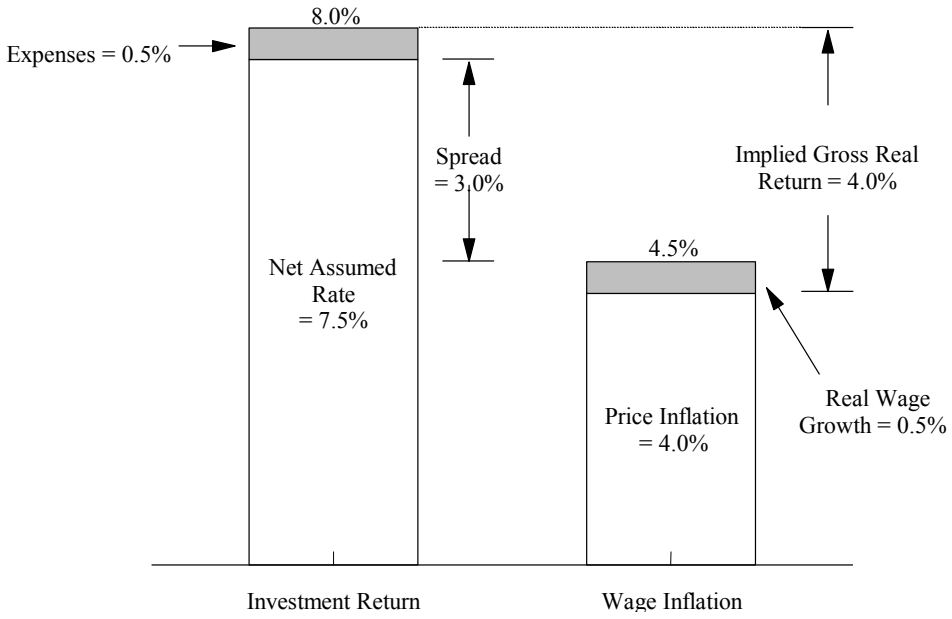
If inflation and/or productivity increases are lower than expected, it will probably result in both actual rates of salary increases and investment return which are lower than the assumed rates. Salaries increasing less than expected produce lower liabilities. Investment return less than assumed rates (whether due to manager performance, change in the mix of assets, or general market conditions) results in less assets than expected. To the extent that inflation, productivity, and other factors have about the same effect on both sides of the balance sheet, these lower assets and liabilities can offset one another over the long-term.

Wage Inflation. The average rate of increase in National Average Earnings over the last 53 years is slightly less than the current Indiana State Teachers' Retirement Fund 5.5% assumption (see schedule on page 9). However, both state and national average salaries have risen at a slower pace since 1990. The difference between the long-term averages and Indiana State Teachers' Retirement Fund more recent experience is related to the local economic environment and to the excess rates of price and wage inflation during the 1970s which most observers do not expect to see repeated. When the decade of high inflation is factored out, long term national averages drop below 5%. **We believe a reasonable range within which to set this assumption is between 3.5% and 4.5% per year.**

Investment Return and Spread. The Indiana State Teachers' Retirement Fund asset portfolio is a diversified mix of equity and fixed income investments. Real market returns (the spread between recognized net investment return and wage inflation) for balanced portfolios have averaged 3.6% over the last 53 years (see schedule on the following page). Only hindsight will tell whether a particular combination of economic assumptions is optimal. If future economic patterns are favorable, increasing the spread would prove to be reasonable. If, on the other hand, the spread is increased and does not materialize, a contribution rate increase will become likely at some future date.

The current net real return assumption is 2.0% (7.5% nominal less 5.5% wage inflation). This 2.0% spread is believed to be at the low end of a reasonable range for a major program with a substantial equity exposure. We believe a prudent assumption for Indiana State Teachers' Retirement Fund at this point in time is between 3.0% and 4.0%. Adding a 3.0% spread to an underlying wage inflation rate of 4.5% produces a nominal rate of net investment return of 7.5%.

The relationship between economic assumptions based on a 3.0% spread is illustrated below:



HISTORICAL PATTERNS OF INVESTMENT RETURN, PAY INCREASES & INFLATION

Calendar Year Period	Gross Market Returns				Price Inflation (CPI)	National Average Earnings	Sample Balanced Fund*	
	Bonds (Long)		Cash Equiv. (T Bills)	Stocks (S&P 500)			Total Return (I)	Spread: I - NAE
	U.S. Treasury	Corp. (S&P AA)						
1950-1959	(0.1)%	1.0 %	1.9 %	19.4 %	2.2 %	4.5 %	8.6 %	4.1 %
1960-1969	1.4 %	1.7 %	3.9 %	7.8 %	2.5 %	4.3 %	4.6 %	0.3 %
1970-1979	5.5 %	6.2 %	6.3 %	5.9 %	7.4 %	6.9 %	6.3 %	(0.6)%
1980-1989	12.6 %	13.0 %	8.9 %	17.5 %	5.1 %	5.8 %	14.6 %	8.8 %
1990-1999	8.8 %	8.4 %	4.9 %	18.2 %	2.9 %	4.2 %	12.3 %	8.1 %
2000-2002	14.1 %	13.3 %	3.8 %	(14.6)%	2.5 %	3.6 %	1.5 %	(2.1)%
Last 53 Years	**6.0 %**	**6.4 %**	**5.1 %**	**11.8 %**	**3.9 %**	**5.1 %**	**8.7 %**	**3.6 %**

* Sample Balanced Fund	
Equities	40%
Bonds - Government	25%
- Corporate	25%
Cash Equivalents	10%
	100%

 # Historical Spread

Observed spread is very sensitive to the observation period, even over long periods, as illustrated below:

Observation Period	Spread
63 years	2.7%
53 years	3.6%
43 years	3.6%
33 years	4.7%

SUMMARY OF VALUATION RESULTS

COMPUTED EMPLOYER CONTRIBUTION RATES AND FUNDED STATUS
AS OF JUNE 30, 2002
COMPARISON OF PRESENT AND ALTERNATE ASSUMPTIONS

Contributions for	Present Assumptions		Proposed Decrement Assumptions and Indicated Economic Assumptions			
			Present Economic		Alt. 1	
	Employer Contributions As % s of Active Payroll For Fiscal Year 2003-2004		Employer Contributions As % s of Active Payroll For Fiscal Year 2003-2004		Employer Contributions As % s of Active Payroll For Fiscal Year 2003-2004	
	Closed Plan 37-Year Amortization of UAAL	New Plan 37-Year Amortization of UAAL	Closed Plan 37-Year Amortization of UAAL	New Plan 37-Year Amortization of UAAL	Closed Plan 37-Year Amortization of UAAL	New Plan 37-Year Amortization of UAAL
Normal Cost:						
Age and Service Pensions	7.03%	7.19%	6.70%	6.86%	5.73%	5.94%
Disability and Death-in-Service	0.36%	0.34%	0.31%	0.29%	0.26%	0.26%
Totals	7.39%	7.53%	7.01%	7.15%	5.99%	6.20%
Unfunded Actuarial Accrued Liability (UAAL):						
Retired Members and Beneficiaries	2.23%	0.00%	2.31%	0.00%	2.71%	0.00%
Active and Inactive Vested Members	8.74%	1.97%	8.46%	1.85%	9.62%	1.89%
Totals	10.97%	1.97%	10.77%	1.85%	12.33%	1.89%
Computed Employer Contribution Rates	**18.36%**	**9.50%**	**17.78%**	**9.00%**	**18.32%**	**8.09%**
$ Contribution Based on Computed Rates	**$532,000,000**	**$106,000,000**	**$516,000,000**	**$101,000,000**	**$521,000,000**	**$89,000,000**
2003-2004 Expected Employer Contribution Amount Based on Budgeted Rates#	**$448,000,000**	**$101,000,000**	**$448,000,000**	**$101,000,000**	**$448,000,000**	**$99,000,000**

 # The Expected Employer Contribution Amount shown for the Closed Plan is the amount of pension benefits expected to be paid in the 2003-2004 fiscal year. The Expected Employer Contribution Amount shown for the New Plan is the current Board-adopted rate of 9% of payroll multiplied by the projected valuation payroll. These figures include a 1 year projected increase in valuation payroll at 5.5% for present assumptions and 4.5% for Alt. 1.

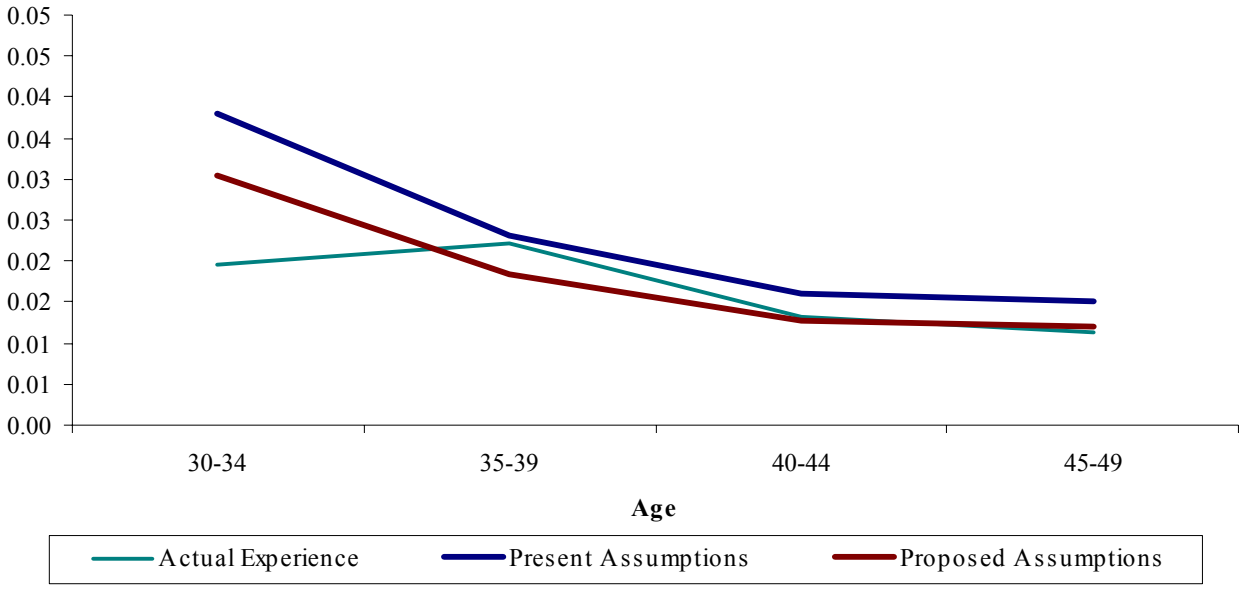
	Economic Assumptions		
Combinations	Interest Rate	Wage Inflation	Spread
Valuation	7.50%	5.50%	2.00%
Alternate 1	7.50%	4.50%	3.00%

Withdrawal Rates

AGE-BASED WITHDRAWAL EXPERIENCE – MALE

10 or More Years of Service
At Assumed Termination (Middle of Year)

Age	Actual Withdrawals	Exposure	Rates			Expected Withdrawals	
			Crude	Current	Proposed	Current	Proposed
30-34	25	1,283	0.0195	0.0380	0.0304	49	39
35-39	129	5,792	0.0223	0.0230	0.0184	133	107
40-44	122	9,187	0.0133	0.0160	0.0128	147	118
45-49	185	16,389	0.0113	0.0150	0.0120	246	197
Total	461	32,651				575	461
50-54	156	1,105	0.1412	0.0140	0.0112	15	12
55-59	156	535	0.2916	0.0120	0.0096	6	5
Totals	773	34,291	0.0225	0.0174	0.0139	596	478
Ref				202	202 x 0.8		



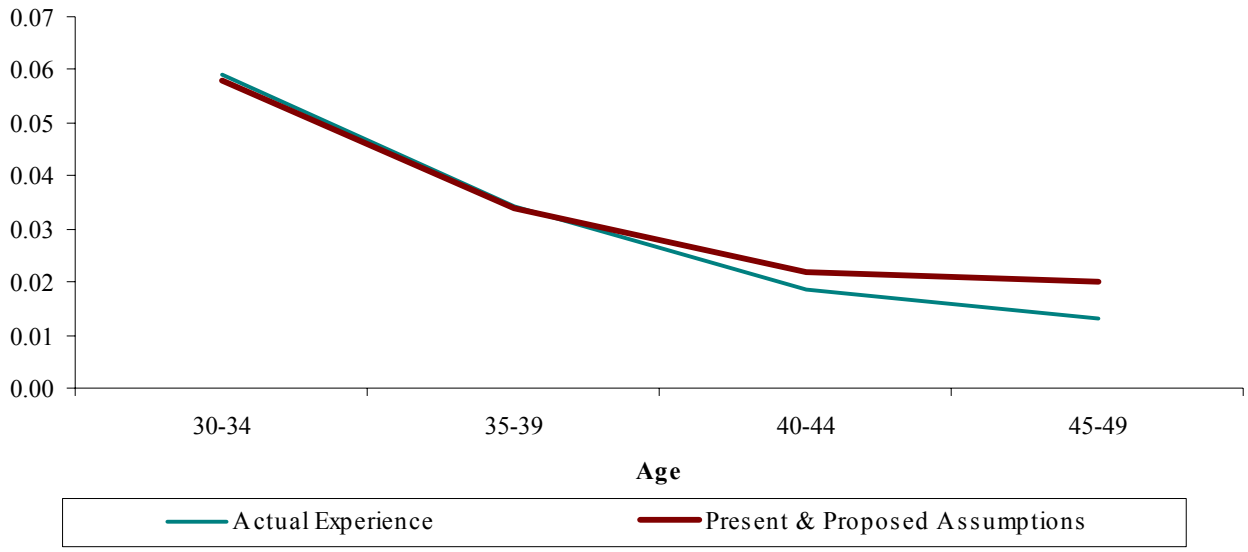
Note: Individuals over age 50 were not considered in making our recommendations, as those with 15 years of service are eligible for early retirement, and others may be eligible for a disability benefit. However, we have shown this information for your review.

The number of male age-based withdrawals was lower than expected over the experience period.

AGE-BASED WITHDRAWAL EXPERIENCE – FEMALE

10 or More Years of Service
At Assumed Termination (Middle of Year)

Age	Actual Withdrawals	Exposure	Rates			Expected Withdrawals	
			Crude	Current	Proposed	Current	Proposed
30-34	214	3,622	0.0591	0.0580	0.0580	210	210
35-39	481	14,051	0.0342	0.0340	0.0340	478	478
40-44	405	21,859	0.0185	0.0220	0.0220	481	481
45-49	515	39,531	0.0130	0.0200	0.0200	791	791
Total	1,615	79,063				1,960	1,960
50-54	358	6,878	0.0521	0.0200	0.0200	138	138
55-59	295	2,630	0.1122	0.0140	0.0140	37	37
Totals	2,268	88,571	0.0256	0.0241	0.0241	2,135	2,135
Ref				203	203		



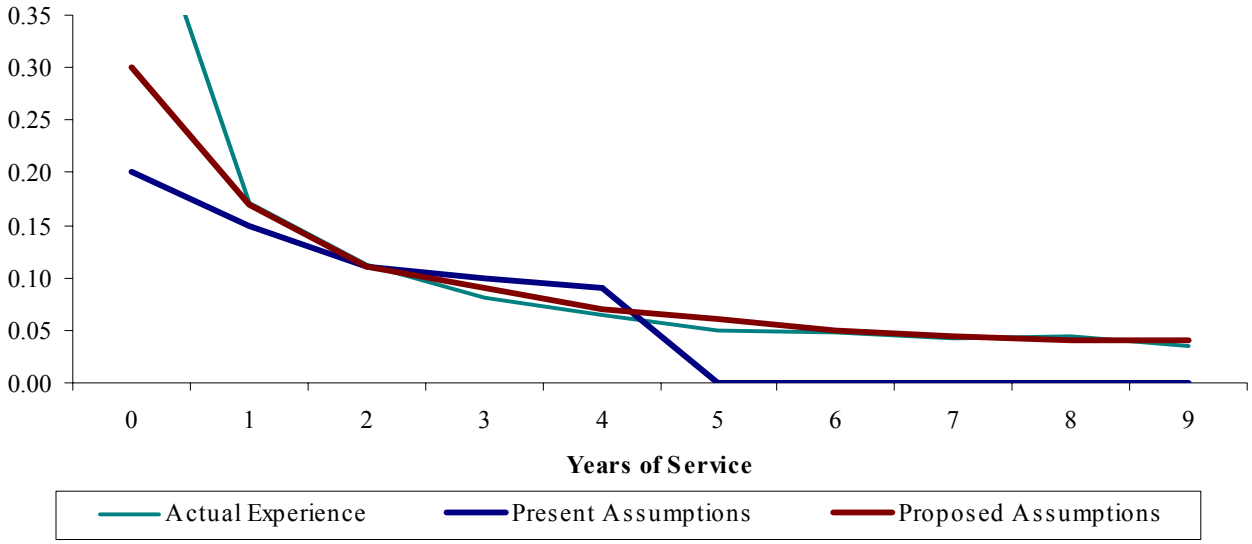
Note: Individuals over age 50 were not considered in making our recommendations, as those with 15 years of service are eligible for early retirement, and others may be eligible for a disability benefit. However, we have shown this information for your review.

The number of female age-based withdrawals were less than expected levels over the experience period. However, current assumptions at various ages were still reasonable and no change was recommended.

SERVICE-BASED WITHDRAWAL EXPERIENCE – MALE

Less Than 10 Years of Service
At Assumed Termination (Middle of Year)

Service	Actual Withdrawals	Exposure	Rates			Expected Withdrawals	
			Crude	Current	Proposed	Current	Proposed
0	5,218	10,468	0.4985	0.2000	0.3000	2,094	3,140
1	1,093	6,399	0.1708	0.1500	0.1700	960	1,088
2	565	5,055	0.1118	0.1100	0.1100	556	556
3	356	4,368	0.0815	0.1000	0.0900	437	393
4	251	3,860	0.0650	0.0900	0.0700	347	270
5	172	3,500	0.0491	0.0000	0.0600	-	210
6	150	3,145	0.0477	0.0000	0.0500	-	157
7	121	2,817	0.0430	0.0000	0.0450	-	127
8	114	2,618	0.0435	0.0000	0.0400	-	105
9	83	2,394	0.0347	0.0000	0.0400	-	96
Totals	8,123	44,624	0.1820	0.0985	0.1376	4,394	6,142
Ref				120	293		

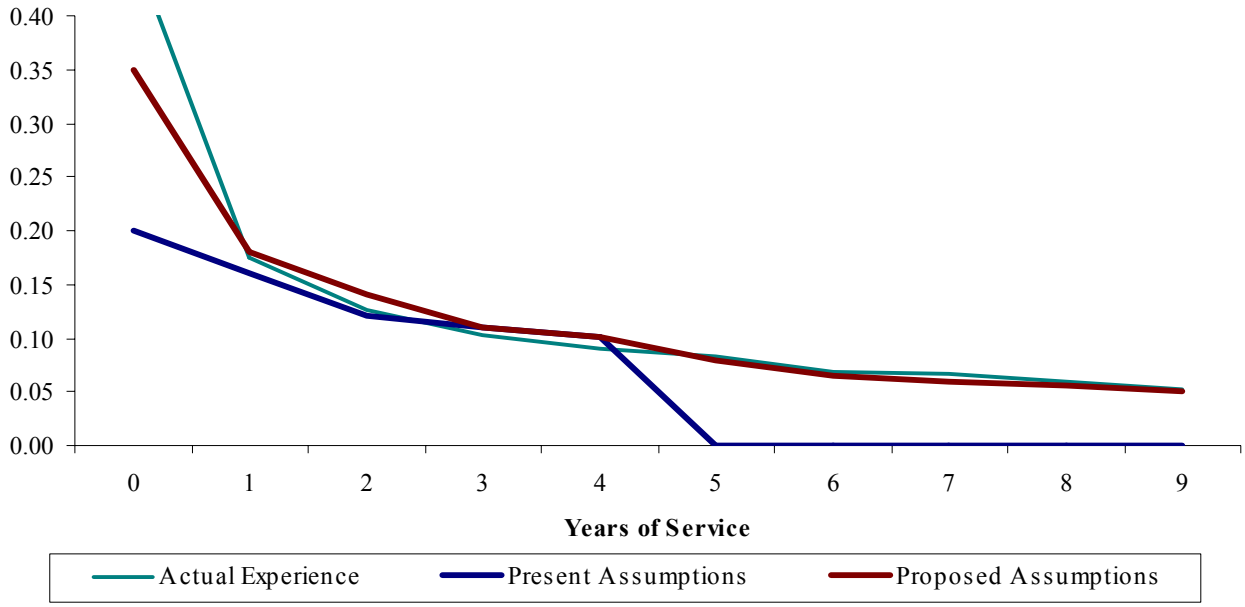


The number of male service-based withdrawals was higher than expected at lower years of service. Rates were extended to reflect a 10-year time frame (as opposed to 5-year in the past) in accordance with the ISTRF vesting requirement.

SERVICE-BASED WITHDRAWAL EXPERIENCE – FEMALE

Less Than 10 Years of Service
At Assumed Termination (Middle of Year)

Service	Actual Withdrawals	Exposure	Rates			Expected Withdrawals	
			Crude	Current	Proposed	Current	Proposed
0	12,792	27,687	0.4620	0.2000	0.3500	5,537	9,690
1	3,266	18,681	0.1748	0.1600	0.1800	2,989	3,363
2	1,856	14,658	0.1266	0.1200	0.1400	1,759	2,052
3	1,327	12,950	0.1025	0.1100	0.1100	1,424	1,424
4	1,046	11,538	0.0907	0.1000	0.1000	1,154	1,154
5	866	10,462	0.0828	0.0000	0.0800	-	837
6	638	9,280	0.0688	0.0000	0.0650	-	603
7	567	8,392	0.0676	0.0000	0.0600	-	504
8	473	7,909	0.0598	0.0000	0.0550	-	435
9	388	7,511	0.0517	0.0000	0.0500	-	376
Totals	23,219	129,068	0.1799	0.0997	0.1584	12,863	20,438
Ref				121	294		

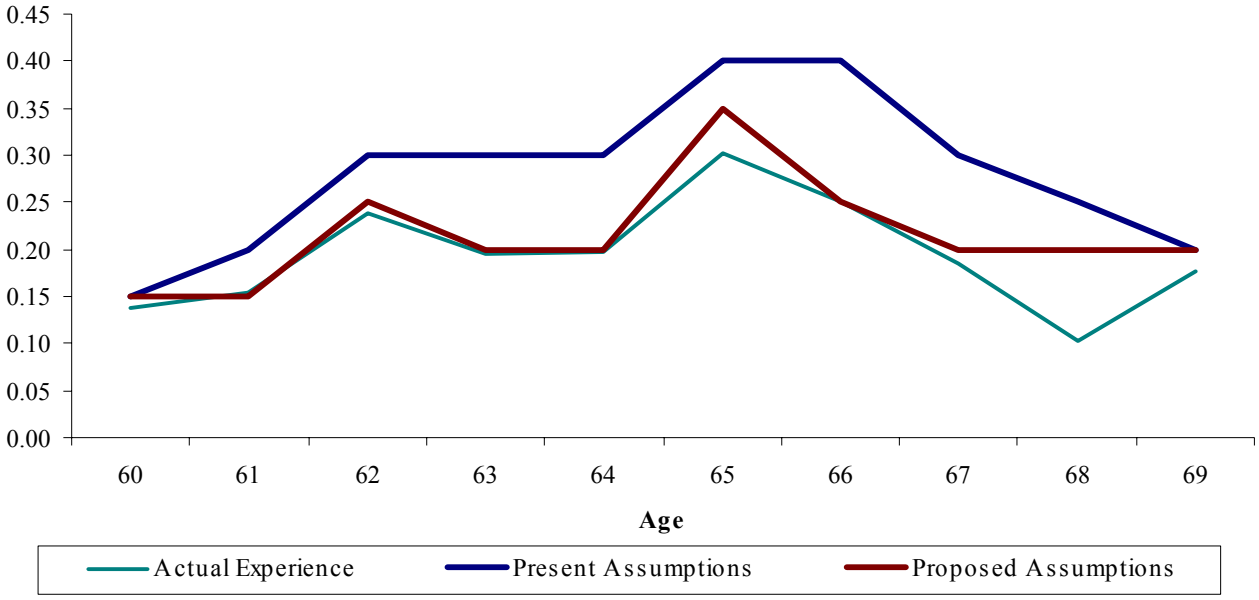


The number of female service-based withdrawals was higher than expected at lower years of service. Rates were extended to reflect a 10-year time frame (as opposed to 5-year in the past) in accordance with the ISTRF vesting requirement.

Retirement Rates

AGE AND SERVICE RETIREMENT EXPERIENCE – MALE

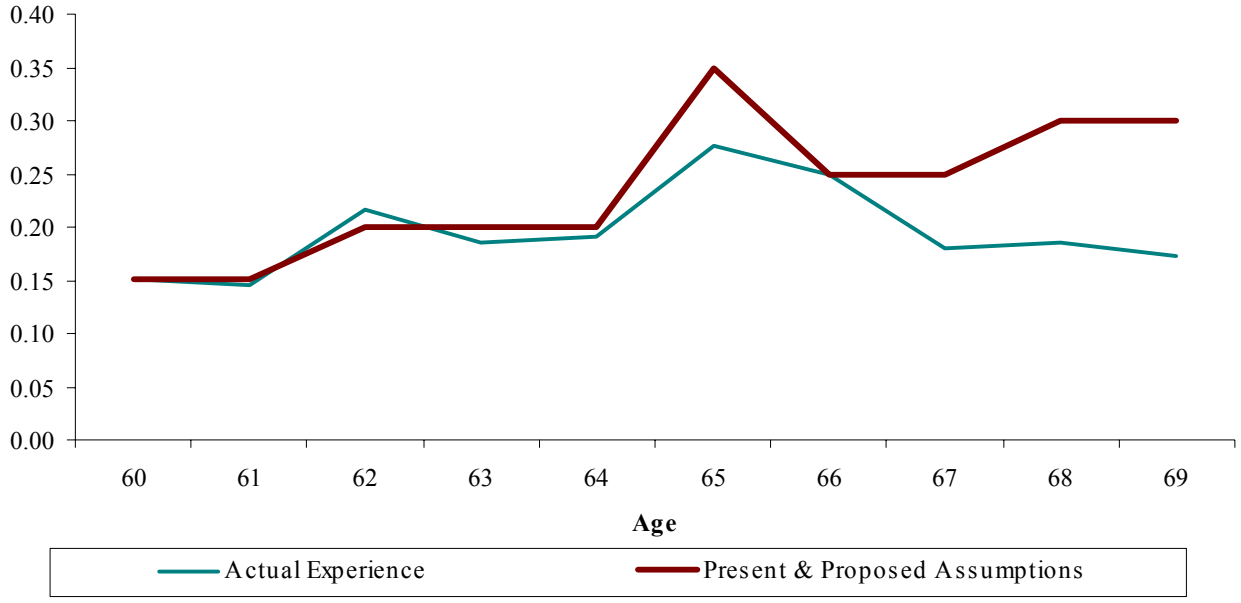
Age	Actual Retirements	Exposure	Rates			Expected Retirements	
			Crude	Current	Proposed	Current	Proposed
60	231	1,668	0.1385	0.1500	0.1500	250	250
61	200	1,302	0.1536	0.2000	0.1500	260	195
62	245	1,027	0.2386	0.3000	0.2500	308	257
63	130	667	0.1949	0.3000	0.2000	200	133
64	100	509	0.1965	0.3000	0.2000	153	102
65	113	375	0.3013	0.4000	0.3500	150	131
66	55	219	0.2511	0.4000	0.2500	88	55
67	25	135	0.1852	0.3000	0.2000	41	27
68	9	88	0.1023	0.2500	0.2000	22	18
69	12	68	0.1765	0.2000	0.2000	14	14
Totals	1,120	6,058				1,486	1,182
70 & Over	29	159	0.1824	1.0000	1.0000	159	159
Total	1,149	6,217		731	485	1,645	1,341



The number of male age and service retirements was less than expected over the experience period.

AGE AND SERVICE RETIREMENT EXPERIENCE – FEMALE

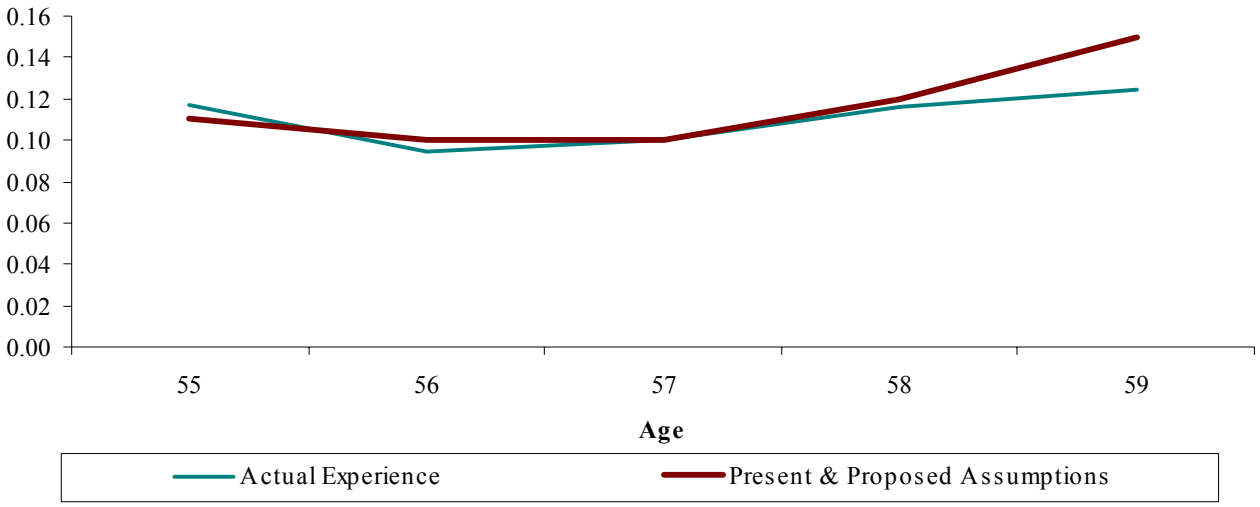
Age	Actual Retirements	Exposure	Rates			Expected Retirements	
			Crude	Current	Proposed	Current	Proposed
60	422	2,784	0.1516	0.1500	0.1500	418	418
61	310	2,120	0.1462	0.1500	0.1500	318	318
62	374	1,725	0.2168	0.2000	0.2000	345	345
63	221	1,188	0.1860	0.2000	0.2000	238	238
64	172	897	0.1918	0.2000	0.2000	179	179
65	204	737	0.2768	0.3500	0.3500	258	258
66	111	447	0.2483	0.2500	0.2500	112	112
67	53	293	0.1809	0.2500	0.2500	73	73
68	41	220	0.1864	0.3000	0.3000	66	66
69	30	174	0.1724	0.3000	0.3000	52	52
Totals	1,938	10,585				2,059	2,059
70 & Over	88	461	0.1909	1.0000	1.0000	461	461
Total	2,026	11,046		732	732	2,520	2,520



The number of female age and service retirements was close to the expected number over the experience period.

RULE OF 85 RETIREMENT EXPERIENCE – MALE

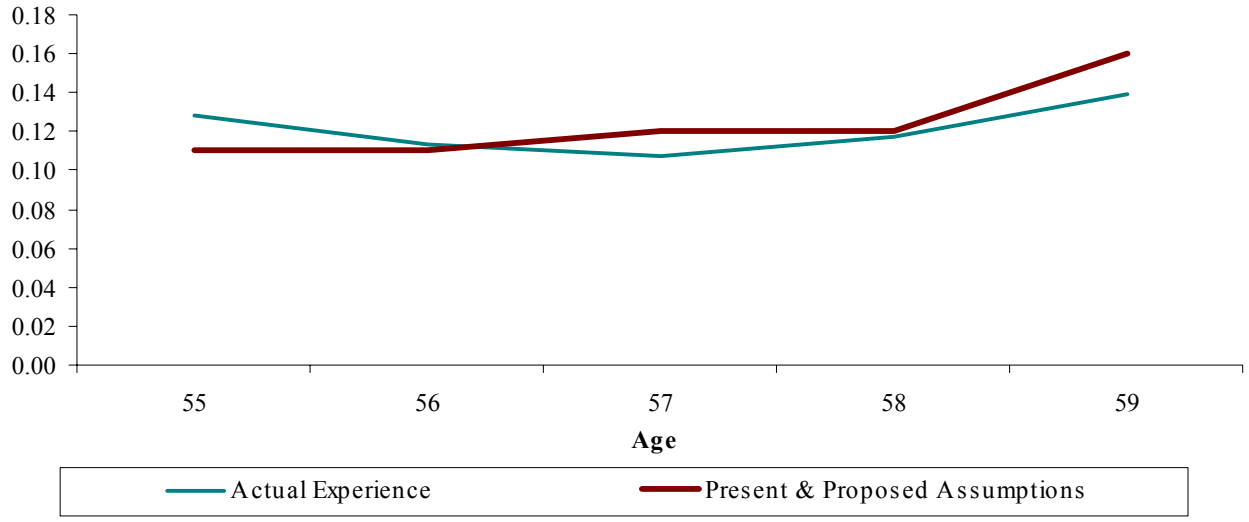
Age	Actual Retirements	Exposure	Rates			Expected Retirements	
			Crude	Current	Proposed	Current	Proposed
55	335	2,865	0.1169	0.1100	0.1100	315	315
56	247	2,620	0.0943	0.1000	0.1000	262	262
57	244	2,443	0.0999	0.1000	0.1000	244	244
58	257	2,208	0.1164	0.1200	0.1200	265	265
59	231	1,860	0.1242	0.1500	0.1500	279	279
Total	1,314	11,996		733	486	1,365	1,365



The number of male Rule of 85 retirements was close to the expected number over the experience period.

RULE OF 85 RETIREMENT EXPERIENCE – FEMALE

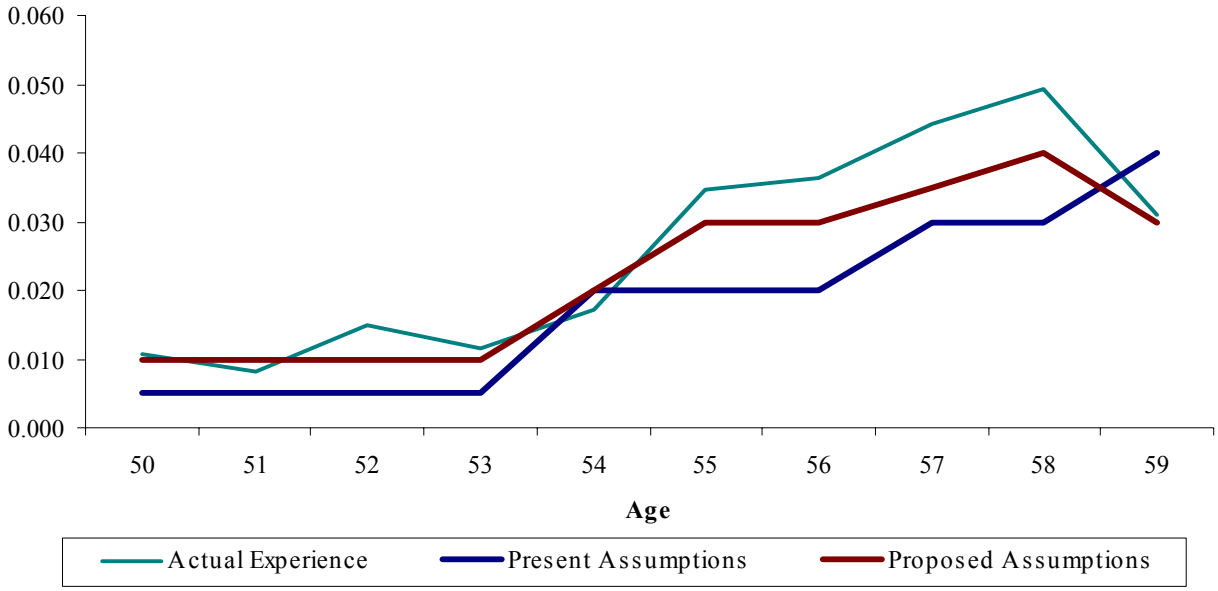
Age	Actual Retirements	Exposure	Rates Crude	Rates Current	Rates Proposed	Expected Retirements Current	Expected Retirements Proposed
55	368	2,863	0.1285	0.1100	0.1100	315	315
56	292	2,577	0.1133	0.1100	0.1100	283	283
57	258	2,409	0.1071	0.1200	0.1200	289	289
58	276	2,361	0.1169	0.1200	0.1200	283	283
59	302	2,168	0.1393	0.1600	0.1600	347	347
Total	1,496	12,378		734	734	1,517	1,517



The number of female Rule of 85 retirements was close to the expected number during the experience period.

EARLY (REDUCED) RETIREMENT EXPERIENCE – MALE

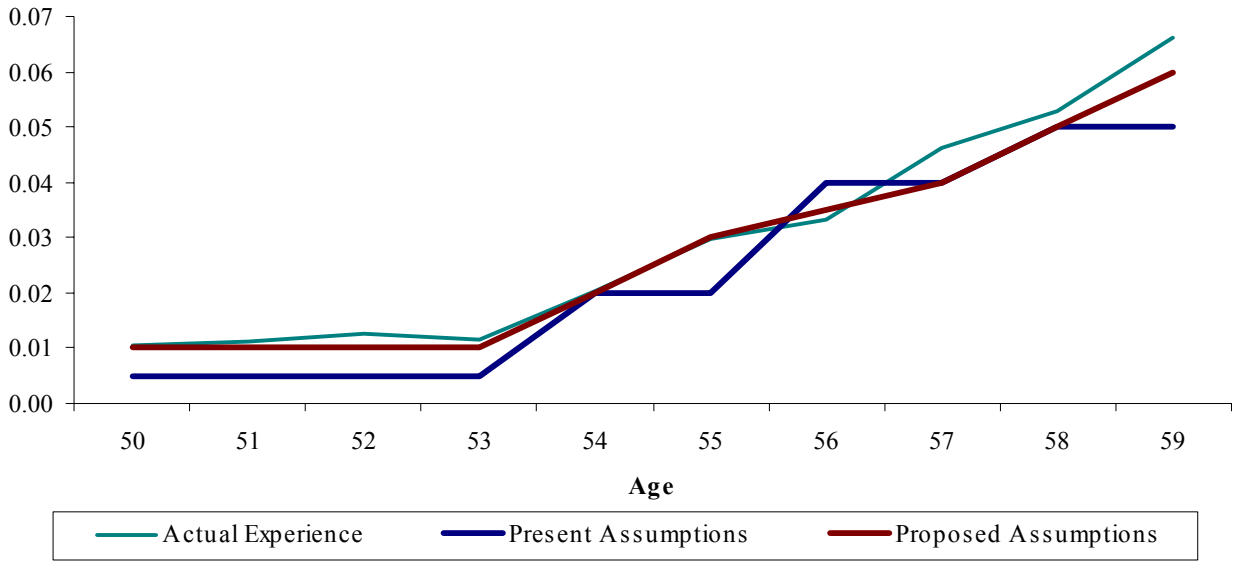
Age	Actual Retirements	Exposure	Rates			Expected Retirements	
			Crude	Current	Proposed	Current	Proposed
50	42	3,959	0.0106	0.0050	0.0100	20	40
51	35	4,223	0.0083	0.0050	0.0100	21	42
52	64	4,321	0.0148	0.0050	0.0100	22	43
53	49	4,224	0.0116	0.0050	0.0100	21	42
54	71	4,159	0.0171	0.0200	0.0200	83	83
55	41	1,183	0.0347	0.0200	0.0300	24	35
56	26	717	0.0363	0.0200	0.0300	14	22
57	20	453	0.0442	0.0300	0.0350	14	16
58	15	305	0.0492	0.0300	0.0400	9	12
59	6	194	0.0309	0.0400	0.0300	8	6
Totals	369	23,738		735	435	236	341



The number of male early retirements was higher than the expected number over the experience period.

EARLY (REDUCED) RETIREMENT EXPERIENCE – FEMALE

Age	Actual Retirements	Exposure	Rates			Expected Retirements	
			Crude	Current	Proposed	Current	Proposed
50	88	8,279	0.0106	0.0050	0.0100	41	83
51	94	8,408	0.0112	0.0050	0.0100	42	84
52	103	8,111	0.0127	0.0050	0.0100	41	81
53	88	7,608	0.0116	0.0050	0.0100	38	76
54	146	7,143	0.0204	0.0200	0.0200	143	143
55	113	3,788	0.0298	0.0200	0.0300	76	114
56	97	2,930	0.0331	0.0400	0.0350	117	103
57	108	2,336	0.0462	0.0400	0.0400	93	93
58	93	1,764	0.0527	0.0500	0.0500	88	88
59	84	1,269	0.0662	0.0500	0.0600	63	76
Totals	1,014	51,636		736	481	742	941

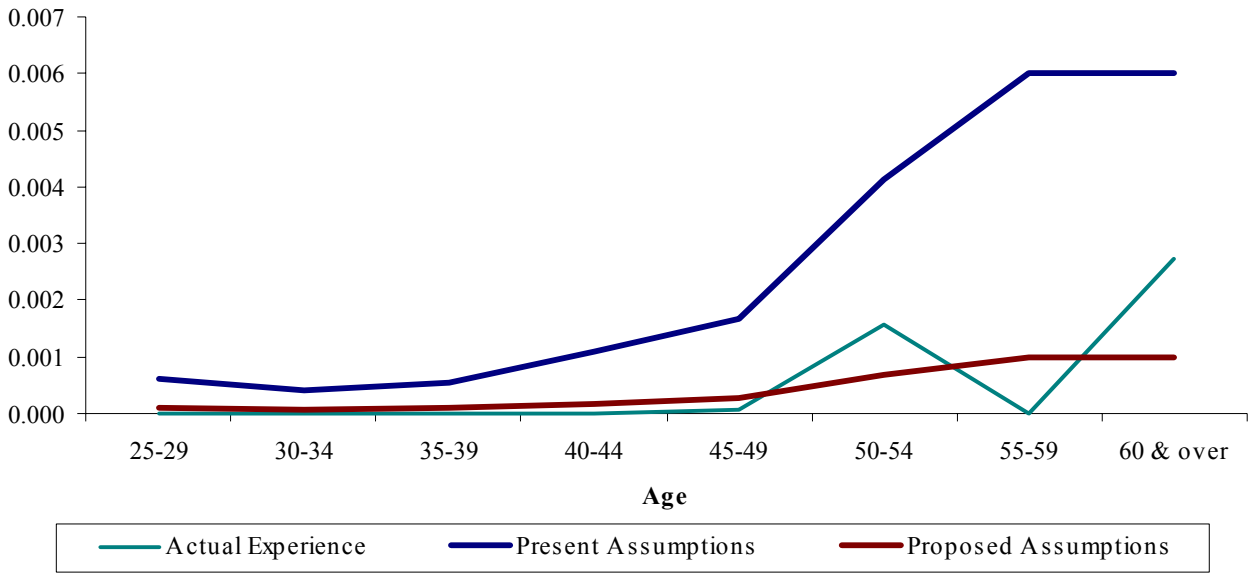


The number of female early retirements was higher than the expected number over the experience period.

Disability Rates

MALE DISABILITY EXPERIENCE

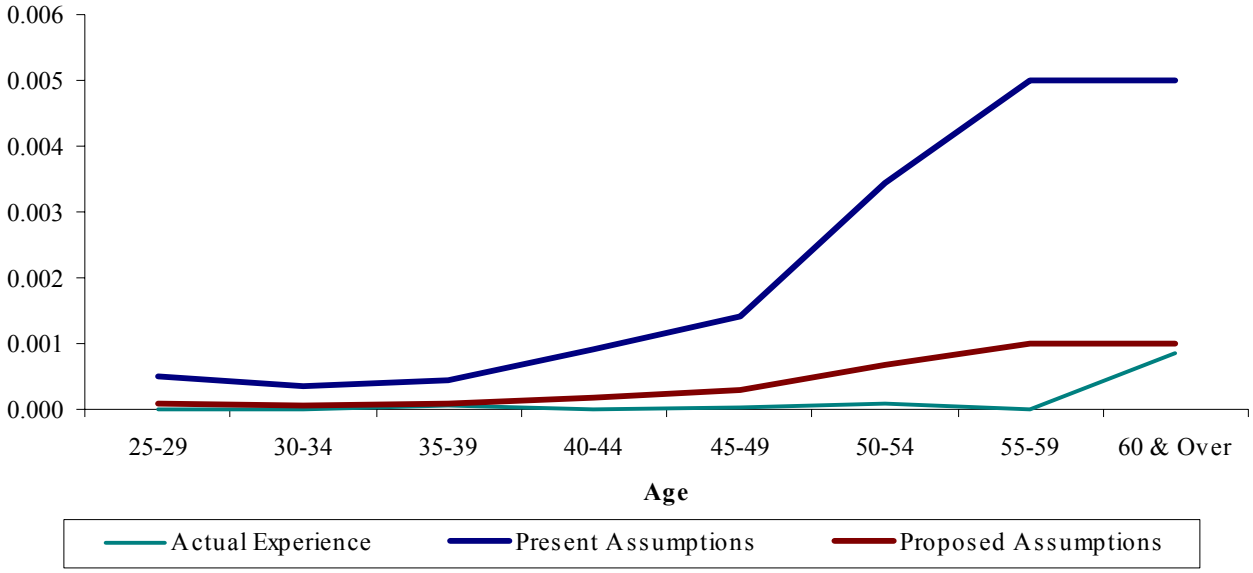
Age	Actual Disabilities	Exposure	Rates Crude	Rates Current	Rates Proposed	Expected Disabilities Current	Expected Disabilities Proposed
25-29	0	1,863	0.0000	0.0006	0.0001	1	0
30-34	0	6,929	0.0000	0.0004	0.0001	3	0
35-39	0	8,096	0.0000	0.0005	0.0001	4	1
40-44	0	10,624	0.0000	0.0011	0.0002	11	2
45-49	1	17,498	0.0001	0.0017	0.0003	29	5
50-54	3	1,923	0.0016	0.0041	0.0007	8	1
55-59	0	914	0.0000	0.0060	0.0010	5	1
60 & over	1	364	0.0027	0.0060	0.0010	2	0
Totals	5	48,211	0.0001	0.0013	0.0002	63	10
Ref				135x0.6	135x0.1		



The incidence of male disability retirement was less than expected during the experience period. Please see comments on page 6.

FEMALE DISABILITY EXPERIENCE

Age	Actual Disabilities	Exposure	Rates Crude	Rates Current	Rates Proposed	Expected Disabilities Current	Expected Disabilities Proposed
25-29	0	5,416	0.0000	0.0005	0.0001	3	1
30-34	0	16,509	0.0000	0.0003	0.0001	6	1
35-39	1	19,027	0.0001	0.0004	0.0001	9	2
40-44	0	27,350	0.0000	0.0009	0.0002	25	5
45-49	1	45,864	0.0000	0.0014	0.0003	64	13
50-54	1	10,890	0.0001	0.0034	0.0007	38	8
55-59	0	3,937	0.0000	0.0050	0.0010	20	4
60 & Over	1	1,163	0.0009	0.0050	0.0010	6	1
Totals	4	130,156	0.0000	0.0013	0.0003	171	35
Ref				135x0.5	135x0.1		



The incidence of female disability retirement was less than expected during the experience period. Please see comments on page 6.

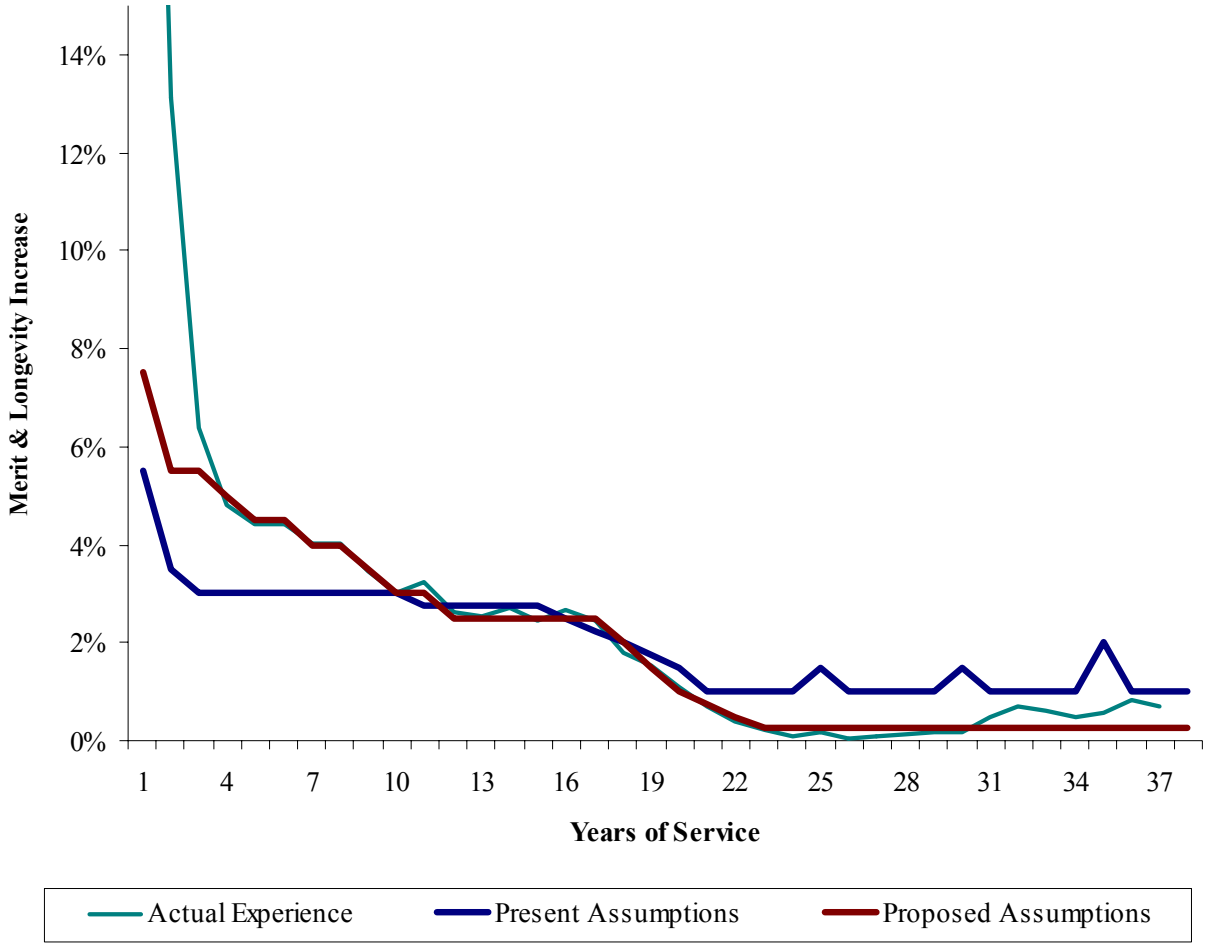
Salary Rates

SALARY INCREASE EXPERIENCE

Service at Beginning of Year	Exposure Years	Total Change Actual	Merit & Seniority Rate Only		
			Current Rate	Actual Rate	Proposed Rate
1	18,871	35.33%	5.50%	31.83%	7.50%
2	16,068	16.61%	3.50%	13.11%	5.50%
3	14,562	9.90%	3.00%	6.40%	5.50%
4	13,162	8.30%	3.00%	4.80%	5.00%
5	12,215	7.94%	3.00%	4.44%	4.50%
6	10,822	7.92%	3.00%	4.42%	4.50%
7	10,031	7.54%	3.00%	4.04%	4.00%
8	9,495	7.54%	3.00%	4.04%	4.00%
9	9,140	6.98%	3.00%	3.48%	3.50%
10	9,153	6.53%	3.00%	3.03%	3.00%
11	9,601	6.72%	2.75%	3.22%	3.00%
12	9,641	6.14%	2.75%	2.64%	2.50%
13	9,722	6.04%	2.75%	2.54%	2.50%
14	9,457	6.19%	2.75%	2.69%	2.50%
15	8,792	5.94%	2.75%	2.44%	2.50%
16	8,200	6.15%	2.50%	2.65%	2.50%
17	7,882	5.95%	2.25%	2.45%	2.50%
18	7,924	5.30%	2.00%	1.80%	2.00%
19	8,475	5.03%	1.75%	1.53%	1.50%
20	9,110	4.60%	1.50%	1.10%	1.00%
21	9,646	4.18%	1.00%	0.68%	0.75%
22	10,102	3.90%	1.00%	0.40%	0.50%
23	10,333	3.71%	1.00%	0.21%	0.25%
24	10,506	3.61%	1.00%	0.11%	0.25%
25	10,529	3.68%	1.50%	0.18%	0.25%
26	10,473	3.55%	1.00%	0.05%	0.25%
27	10,349	3.59%	1.00%	0.09%	0.25%
28	9,839	3.63%	1.00%	0.13%	0.25%
29	9,002	3.67%	1.00%	0.17%	0.25%
30	7,873	3.68%	1.50%	0.18%	0.25%
31	6,764	3.96%	1.00%	0.46%	0.25%
32	5,328	4.20%	1.00%	0.70%	0.25%
33	4,038	4.12%	1.00%	0.62%	0.25%
34	3,123	4.00%	1.00%	0.50%	0.25%
35	2,401	4.08%	2.00%	0.58%	0.25%
36	1,856	4.34%	1.00%	0.84%	0.25%
37	1,340	4.20%	1.00%	0.70%	0.25%
39	682	5.02%	1.00%	1.52%	0.25%
Weighted Average Rate, Years 3 and up		**5.62%**	419		64

See graph on the following page.

SALARY INCREASE EXPERIENCE



Over the experience period, salary increases were higher than expected at very early service ranges and lower than expected at later service ranges.

Mortality Rates

RETIRED LIFE MORTALITY STUDY
1997-2002

The retired life mortality study was performed with a file matching technique that tracks each individual record reported to the actuary year to year throughout the experience period. If a record is found in the valuation data in one year, and not in the following year, the person is treated as having died during the year. The study included non-disabled retirees and their beneficiaries. In addition, we are aware of a small number of retirees that have returned to work. These individuals did not have an impact on our recommendations.

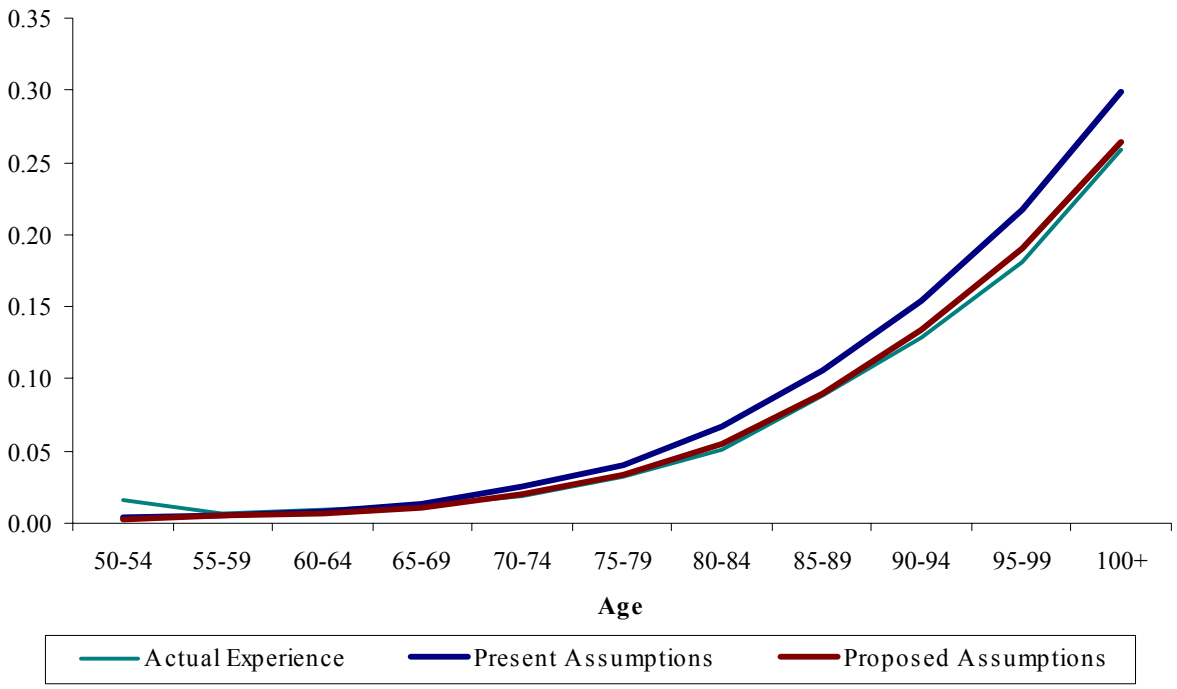
Mortality rates were close to expected, and were only changed slightly due to the study. Rates for males were adjusted to reflect an additional 2-year setback to allow for future improvements in mortality. No changes were made to female mortality rates.

Historically, disabled mortality rates have been set forward 10 years in relation to regular mortality rates; thus, disabled mortality rates were adjusted to correspond with the new mortality rates.

Details of the mortality study are reported on the following pages.

MALE RETIRED LIFE MORTALITY
NON-DISABILITY RETIREES

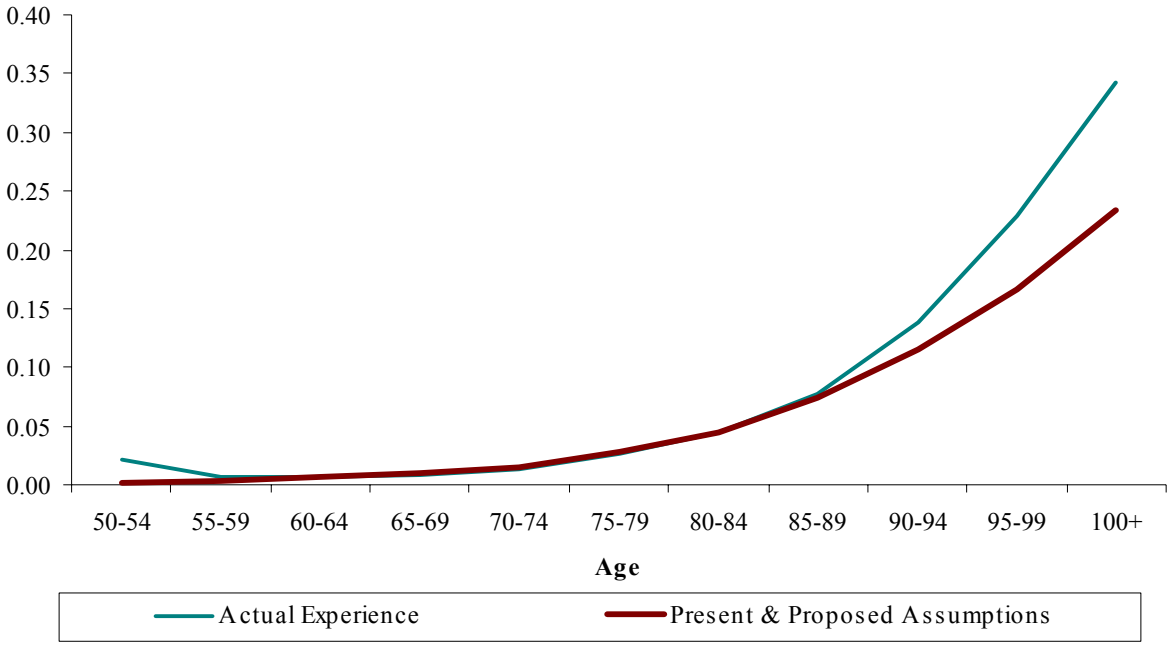
Age	Actual Deaths	Exposure	Rates Crude	Rates Current	Rates Proposed	Expected Current	Expected Proposed
50-54	8	501	0.0160	0.0035	0.0028	2	1
55-59	24	3,303	0.0073	0.0057	0.0048	19	16
60-64	89	9,506	0.0094	0.0084	0.0071	80	68
65-69	158	12,956	0.0122	0.0139	0.0111	180	144
70-74	235	12,532	0.0188	0.0248	0.0198	311	248
75-79	326	10,156	0.0321	0.0404	0.0334	410	339
80-84	327	6,359	0.0514	0.0671	0.0548	427	348
85-89	371	4,189	0.0886	0.1060	0.0893	444	374
90-94	329	2,566	0.1282	0.1549	0.1339	397	344
95-99	206	1,136	0.1813	0.2179	0.1905	248	216
100+	90	347	0.2594	0.2992	0.2640	104	92
Totals	2,163	63,551	0.0340	0.0413	0.0345	2,622	2,190
				#166x1sb1	#166x1sb3		



The number of male post-retirement deaths was slightly less than expected over the experience period. Rates were adjusted slightly to reflect expected future improvements in mortality.

FEMALE RETIRED LIFE MORTALITY
NON-DISABILITY RETIREES

Age	Actual Deaths	Exposure	Rates Crude	Current	Proposed	Expected Current	Proposed
50-54	16	732	0.0219	0.0022	0.0022	2	2
55-59	29	4,138	0.0070	0.0039	0.0039	16	16
60-64	83	11,267	0.0074	0.0061	0.0061	69	69
65-69	117	15,193	0.0077	0.0092	0.0092	139	139
70-74	217	16,158	0.0134	0.0156	0.0156	252	252
75-79	354	13,267	0.0267	0.0275	0.0275	365	365
80-84	573	12,918	0.0444	0.0446	0.0446	576	576
85-89	812	10,439	0.0778	0.0741	0.0741	773	773
90-94	1,009	7,301	0.1382	0.1148	0.1148	838	838
95-99	617	2,701	0.2284	0.1663	0.1663	449	449
100+	139	405	0.3432	0.2341	0.2341	95	95
Totals	3,966	94,519	0.0420	0.0378	0.0378	3,574	3,574
				#167x1sb0	#167x1sb0		



The number of female post-retirement deaths was slightly more than expected over the experience period. The current table already includes some margin for expected future improvements in mortality.

MALE ACTIVE LIFE MORTALITY

Sample Attained Ages	Future Life Expectancy (years)	
	Current	Proposed
25	55.91	57.86
30	51.03	52.98
35	46.16	48.11
40	41.34	43.26
45	36.56	38.46
50	31.90	33.74
55	27.42	29.18
60	23.13	24.82
65	19.02	20.64
70	15.23	16.69
	#166x1sb1	#166x1sb3

FEMALE ACTIVE LIFE MORTALITY

Sample Attained Ages	Future Life Expectancy (years)
	Current & Proposed
25	59.82
30	54.93
35	50.05
40	45.20
45	40.38
50	35.62
55	30.98
60	26.55
65	22.29
70	18.23
	#167x1sb0

The active member mortality study was inconclusive. It is often very difficult to differentiate, in the data, between deaths and other terminations. This may be due to the fact that members with impaired health often leave active employment before death occurs (e.g., some become non-vested terminations or disability retirees). The proposed mortality rates are based on the same mortality table as is recommended for retired life mortality. In aggregate, the tables include a small margin for future increases in life expectancy.

Complete Listing of Recommended Assumptions

PROPOSED AGE-BASED AND SERVICE-BASED WITHDRAWAL RATES

Years of Service	Service Based	
	Male	Female
0-1	0.3000	0.3500
1-2	0.1700	0.1800
2-3	0.1100	0.1400
3-4	0.0900	0.1100
4-5	0.0700	0.1000
5-6	0.0600	0.0800
6-7	0.0500	0.0650
7-8	0.0450	0.0600
8-9	0.0400	0.0550
9-10	0.0400	0.0500
Ref	293	294

Attained Age	Age Based	
	Male	Female
25	0.0664	0.0950
26	0.0664	0.0950
27	0.0648	0.0950
28	0.0576	0.0880
29	0.0504	0.0800
30	0.0432	0.0720
31	0.0368	0.0650
32	0.0304	0.0580
33	0.0288	0.0520
34	0.0256	0.0480
35	0.0232	0.0430
36	0.0208	0.0380
37	0.0184	0.0340
38	0.0168	0.0310
39	0.0152	0.0290
40	0.0144	0.0260
41	0.0136	0.0240
42	0.0128	0.0220
43	0.0128	0.0210
44	0.0128	0.0200
45	0.0120	0.0200
46	0.0120	0.0200
47	0.0120	0.0200
48	0.0120	0.0200
49	0.0120	0.0200
50	0.0120	0.0200
51	0.0112	0.0200
52	0.0112	0.0200
53	0.0112	0.0200
54	0.0112	0.0190
55	0.0104	0.0180
56	0.0104	0.0160
57	0.0096	0.0140
58	0.0096	0.0140
60	0.0096	0.0140
Ref	#202x0.8	#203x1

PROPOSED RETIREMENT RATES

Regular Retirement			Rule of 85 Retirement			Early Retirement		
Age	Male	Female	Age	Male	Female	Age	Male	Female
						50	0.0100	0.0100
						51	0.0100	0.0100
						52	0.0100	0.0100
						53	0.0100	0.0100
						54	0.0200	0.0200
			55	0.1100	0.1100	55	0.0300	0.0300
			56	0.1000	0.1100	56	0.0300	0.0350
			57	0.1000	0.1200	57	0.0350	0.0400
			58	0.1200	0.1200	58	0.0400	0.0500
			59	0.1500	0.1600	59	0.0300	0.0600
60	0.1500	0.1500	60	0.1500	0.1500			
61	0.1500	0.1500	61	0.1500	0.1500			
62	0.2500	0.2000	62	0.2500	0.2000			
63	0.2000	0.2000	63	0.2000	0.2000			
64	0.2000	0.2000	64	0.2000	0.2000			
65	0.3500	0.3500	65	0.3500	0.3500			
66	0.2500	0.2500	66	0.2500	0.2500			
67	0.2000	0.2500	67	0.2000	0.2500			
68	0.2000	0.3000	68	0.2000	0.3000			
69	0.2000	0.3000	69	0.2000	0.3000			
70	1.0000	1.0000	70	1.0000	1.0000			
Ref	485	732		486	734		435	481

PROPOSED DISABILITY RATES

Attained Age	Male	Female
20	0.0001	0.0001
21	0.0001	0.0001
22	0.0001	0.0001
23	0.0001	0.0001
24	0.0001	0.0001
25	0.0001	0.0001
26	0.0001	0.0001
27	0.0001	0.0001
28	0.0001	0.0001
29	0.0001	0.0001
30	0.0001	0.0001
31	0.0001	0.0001
32	0.0001	0.0001
33	0.0001	0.0001
34	0.0001	0.0001
35	0.0001	0.0001
36	0.0001	0.0001
37	0.0001	0.0001
38	0.0001	0.0001
39	0.0001	0.0001
40	0.0001	0.0001
41	0.0002	0.0002
42	0.0002	0.0002
43	0.0002	0.0002
44	0.0002	0.0002
45	0.0002	0.0002
46	0.0003	0.0003
47	0.0003	0.0003
48	0.0004	0.0004
49	0.0004	0.0004
50	0.0005	0.0005
51	0.0006	0.0006
52	0.0007	0.0007
53	0.0008	0.0008
54	0.0008	0.0008
55	0.0009	0.0009
56	0.0009	0.0009
57	0.0010	0.0010
58	0.0010	0.0010
59	0.0010	0.0010
60	0.0010	0.0010
Ref	#135x0.1	#135x0.1

PROPOSED MERIT AND SENIORITY SALARY INCREASE RATES

Years of Service	Salary Increase Assumptions for an Individual Member		
	Merit & Seniority	Current Base (Economic)	Increase for the Next Year
1	11.00%	5.50%	16.50%
2	7.50%	5.50%	13.00%
3	5.50%	5.50%	11.00%
4	5.50%	5.50%	11.00%
5	5.00%	5.50%	10.50%
6	4.50%	5.50%	10.00%
7	4.50%	5.50%	10.00%
8	4.00%	5.50%	9.50%
9	4.00%	5.50%	9.50%
10	3.50%	5.50%	9.00%
11	3.00%	5.50%	8.50%
12	3.00%	5.50%	8.50%
13	2.50%	5.50%	8.00%
14	2.50%	5.50%	8.00%
15	2.50%	5.50%	8.00%
16	2.50%	5.50%	8.00%
17	2.50%	5.50%	8.00%
18	2.50%	5.50%	8.00%
19	2.00%	5.50%	7.50%
20	1.50%	5.50%	7.00%
21	1.00%	5.50%	6.50%
22	0.75%	5.50%	6.25%
23	0.50%	5.50%	6.00%
24	0.25%	5.50%	5.75%
25	0.25%	5.50%	5.75%
26	0.25%	5.50%	5.75%
27	0.25%	5.50%	5.75%
28	0.25%	5.50%	5.75%
29	0.25%	5.50%	5.75%
30	0.25%	5.50%	5.75%
31	0.25%	5.50%	5.75%
32	0.25%	5.50%	5.75%
33	0.25%	5.50%	5.75%
34	0.25%	5.50%	5.75%
35	0.25%	5.50%	5.75%
36	0.25%	5.50%	5.75%
37	0.25%	5.50%	5.75%
38	0.25%	5.50%	5.75%
39	0.25%	5.50%	5.75%
40	0.25%	5.50%	5.75%
Ref.	64		

PROPOSED MORTALITY RATES (INCLUDING DISABLED MORTALITY)

Age	Regular		Disabled		Age	Regular		Disabled	
	Male	Female	Male	Female		Male	Female	Male	Female
21	0.0003	0.0003	0.0005	0.0004	61	0.0066	0.0057	0.0176	0.0139
22	0.0003	0.0003	0.0005	0.0005	62	0.0071	0.0061	0.0198	0.0156
23	0.0004	0.0003	0.0005	0.0005	63	0.0077	0.0066	0.0222	0.0176
24	0.0004	0.0003	0.0006	0.0005	64	0.0084	0.0071	0.0248	0.0198
25	0.0004	0.0004	0.0006	0.0005	65	0.0092	0.0077	0.0275	0.0222
26	0.0004	0.0004	0.0006	0.0006	66	0.0101	0.0084	0.0304	0.0248
27	0.0004	0.0004	0.0007	0.0006	67	0.0111	0.0092	0.0334	0.0275
28	0.0004	0.0004	0.0007	0.0006	68	0.0124	0.0101	0.0367	0.0304
29	0.0004	0.0004	0.0008	0.0007	69	0.0139	0.0111	0.0404	0.0334
30	0.0005	0.0004	0.0009	0.0007	70	0.0156	0.0124	0.0446	0.0367
31	0.0005	0.0004	0.0009	0.0008	71	0.0176	0.0139	0.0494	0.0404
32	0.0005	0.0005	0.0010	0.0009	72	0.0198	0.0156	0.0548	0.0446
33	0.0005	0.0005	0.0010	0.0009	73	0.0222	0.0176	0.0607	0.0494
34	0.0006	0.0005	0.0011	0.0010	74	0.0248	0.0198	0.0671	0.0548
35	0.0006	0.0005	0.0012	0.0010	75	0.0275	0.0222	0.0741	0.0607
36	0.0006	0.0006	0.0014	0.0011	76	0.0304	0.0248	0.0815	0.0671
37	0.0007	0.0006	0.0015	0.0012	77	0.0334	0.0275	0.0893	0.0741
38	0.0007	0.0006	0.0017	0.0014	78	0.0367	0.0304	0.0975	0.0815
39	0.0008	0.0007	0.0019	0.0015	79	0.0404	0.0334	0.1060	0.0893
40	0.0009	0.0007	0.0022	0.0017	80	0.0446	0.0367	0.1148	0.0975
41	0.0009	0.0008	0.0025	0.0019	81	0.0494	0.0404	0.1242	0.1060
42	0.0010	0.0009	0.0028	0.0022	82	0.0548	0.0446	0.1339	0.1148
43	0.0010	0.0009	0.0031	0.0025	83	0.0607	0.0494	0.1441	0.1242
44	0.0011	0.0010	0.0035	0.0028	84	0.0671	0.0548	0.1549	0.1339
45	0.0012	0.0010	0.0039	0.0031	85	0.0741	0.0607	0.1663	0.1441
46	0.0014	0.0011	0.0043	0.0035	86	0.0815	0.0671	0.1782	0.1549
47	0.0015	0.0012	0.0048	0.0039	87	0.0893	0.0741	0.1905	0.1663
48	0.0017	0.0014	0.0052	0.0043	88	0.0975	0.0815	0.2030	0.1782
49	0.0019	0.0015	0.0057	0.0048	89	0.1060	0.0893	0.2179	0.1905
50	0.0022	0.0017	0.0061	0.0052	90	0.1148	0.0975	0.2341	0.2030
51	0.0025	0.0019	0.0066	0.0057	91	0.1242	0.1060	0.2484	0.2179
52	0.0028	0.0022	0.0071	0.0061	92	0.1339	0.1148	0.2640	0.2341
53	0.0031	0.0025	0.0077	0.0066	93	0.1441	0.1242	0.2808	0.2484
54	0.0035	0.0028	0.0084	0.0071	94	0.1549	0.1339	0.2992	0.2640
55	0.0039	0.0031	0.0092	0.0077	95	0.1663	0.1441	0.3192	0.2808
56	0.0043	0.0035	0.0101	0.0084	96	0.1782	0.1549	0.3411	0.2992
57	0.0048	0.0039	0.0111	0.0092	97	0.1905	0.1663	0.3651	0.3192
58	0.0052	0.0043	0.0124	0.0101	98	0.2030	0.1782	0.3931	0.3411
59	0.0057	0.0048	0.0139	0.0111	99	0.2179	0.1905	0.4273	0.3651
60	0.0061	0.0052	0.0156	0.0124	100	0.2341	0.2030	0.4695	0.3931
Ref	#166sb3x1	#167sb0x1	#166sb-7x1	#167sb-10x1		#166sb3x1	#167sb0x1	#166sb-7x1	#167sb-10x1

August 14, 2003

Dr. William E. Christopher
Executive Director
Indiana State Teachers' Retirement Fund
150 West Market Street, Suite 300
Indianapolis, Indiana 46204-2809

Dear Bill:

Enclosed are 15 copies of the report of an actuarial investigation of decrement experience for Indiana State Teachers' Retirement Fund covering the period from July 1, 1997 through June 30, 2002.

I look forward to meeting and discussing the results of this study with the Board on Monday, August 25th.

Sincerely,

Judith A. Kermans

JAK/clb

Enclosure